CONTENTS

PROCEEDINGS OF THE 17TH INTERNATIONAL CONFERENCE ON COMPUTERS AND INDUSTRIAL ENGINEERING

C. Patrick Koelling and Hamed K. Eldin — xiii — Editors' Note

QUALITY, RELIABILITY AND TOTAL QUALITY MANAGEMENT

Manikiran Bandi and Charles E. Donaghey — 1 — RELPAC: a reliability & quality control software package

D. L. Kimbler and W. G. Ferrell Jr — 7 — Combining qualitative and quantitative tools in R&D project planning

G. Allen Pugh — 11 — Resampled confidence bounds on effects diagrams for signal-to-noise

Dong Shang Chang — 15 — Reliability bounds for the stress–strength model

Tony Lin and David Titmuss — 21 — Critical component reliability and preventive maintenance improvement to reduce machine down-time

Roger G. Ford — 25 — Statistical process control utilization in the Austin–San Antonio corridor

Isabelle Renaud and Soumaya Yacout — 31 — Decision support system for quality assurance programs in the fish and seafood processing industry

N. S. Hemant Kumar and G. Srinivasan — 37 — Predicting the quality of the final product using multi-variate statistical techniques—a case study

Amjed M. Al-Ghanim and Satish J. Kamat — 43 — Unnatural pattern recognition on control charts using correlation analysis techniques

Thomas M. West and Kuei-Jung Huang — 49 — A spreadsheet-based methodology for quality evaluations

Luis Armando Rosas Rivera, Norma F. Hubele and Frederick P. Lawrence — 55 — C_{pk} Index estimation using data transformation

Stuart H. Rubin — 59 — CAI in engineering education and training

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

INDUSTRIAL ENGINEERING EDUCATION AND TRAINING

Pui-Mun Lee and **William G. Sullivan** 65 The use of multimedia support materials in engineering education

J. Kent Butler 71 Quality assessment in the delivery of academic programs

Lorace L. Massay, Silvanus J. Udoka and **Bala Ram** 77 Industry-university partnerships: a model for engineering education in the 21st century

Thomas J. Crowe and **Jennifer C. Wood** 83 Community collaboration: a new format for manufacturing process fundamentals courses

Liwana S. Bringelson, David M. Lyth, Robert L. Reck and **Robert Landeros** 89 Training industrial engineers with an interfunctional computer simulation game

INFORMATION SYSTEMS, NETWORKING AND COMMUNICATIONS

JrJung Lyu 93 On developing an inventory management system in the client/server environment

Richard L. Smith and **Philip M. Wolfe** 99 Implications of client/server systems on the virtual corporation

Chia-hao Chang and **Yubao Chen** 103 A study of multimedia applications in education and training

Pascal Dreer and **David A. Koonce** 109 Development of an integrated information model for computer integrated manufacturing

M. S. Eid and **C. Moghrabi** 113 ProcessTalk—a natural language interface for industrial applications

Rebecca W. Boren and **William C. Moor** 119 Integrating computers and telephones: problems and possible solutions

Silvanus J. Udoka, Sanjiv Sarin and **Lorace L. Massay** 125 Applications of automatic identification technologies across the I.E. curriculum

Philip M. Wolfe and **Richard L. Smith** 131 Industrial engineers and the deployment of client/server systems technology

Katsumi Tawaratani 135 The strategic management and information network system: the convenience store net-work

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

ARTIFICIAL INTELLIGENCE, EXPERT SYSTEMS, KNOWLEDGE ENGINEERING, NEURAL NETWORKS

Ali K. Kamrani, Sobha Shashikumar and Sanjiv Patel	141	An intelligent knowledge-based system for robotic cell design
Sanjiv A. Patel, Ali K. Kamrani and Elsayed Orady	147	A knowledge-based system for fault diagnosis and maintenance of advanced automated systems
Mauridhi Hery Purnomo, Akira Tada and Eiji Shimizu	153	Beam landing adjustment for color purity of integrated tube component using artificial neural network
Kevin Hooks, Luis Rabelo and Tomas Velasco	159	An expert system framework for a CIM based quality inspection system
Adisorn Aroonwilas and Sanjiwan D. Bhole	165	Expert system for predicting continuous cooling transformation in steels
Y. Kao and Y. B. Moon	171	Feature-based memory association for group technology
John C. Gilkinson, Luis C. Rabelo and Brian O. Bush	177	A real-world scheduling problem using genetic algorithms
L. Wang, H. Seki and H. Itoh	183	A teaching method for accelerating the reinforcement learning and tuning of fuzzy rules
Shilong Ma	187	Automatically modeling, simulating and explaining physical systems
Timon Chih-Ting Du and Philip M. Wolfe	193	The amalgamation of neural networks and fuzzy logic systems—a survey
Wurong Shih and K. Srihari	199	Distributed artificial intelligence in manufacturing systems control
John Murray and Yili Liu	205	AutoCAR—a decision support tool for freeway traffic controllers
Tammy Holter, Xiaoqiang Yao, Luis Carlos Rabelo, Albert Jones and Yuehwern Yih	211	Integration of neural networks and genetic algorithms for an intelligent manufacturing controller

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

Leon D. Cox, Amjed M. Al-Ghanim and David E. Culler 217 A neural network-based methodology for machining knowledge acquisition

PRODUCTION AND OPERATIONS SYSTEMS, SCHEDULING, INVENTORY CONTROL

Martin Rheault, Jocelyn R. Drolet and Georges Abdulnour 221 Physically reconfigurable virtual cells: a dynamic model for a highly dynamic environment

S. M. Taboun, A. H. Abib and A. Atmani 227 Generating efficient points of bicriteria scheduling problem by using compromise programming

Wang Yi Dong 233 Lean production and industrial engineering applied in China

Ali M. Zargar 239 Effect of rework strategies on cycle time

Robert M. Cowdrick 245 Supply Chain Planning (SCP)—concepts and case studies

Raja G. Kasilingam 249 Product mix determination in the presence of alternate process plans and stochastic demand

Sabah U. Randhawa and Nivruti Rai 255 A scheduling decision aid in glass fiber manufacturing

Sabah U. Randhawa and Thomas M. West 261 An integrated approach to facility location problems

Ming Liang 267 Solving a furnace loading problem

Robert Cimikowski and Edward Mooney 273 Heuristics for a new model of facility layout

ChinYao Low 279 Job shop scheduling heuristics for sequence dependent setups

Jeffrey D. Hall, William E. Biles and James Leach 285 An AutoCAD-12 based maintenance management system for manufacturing

Edward J. Yellig and Gerald T. Mackulak 291 Projecting on-time performance for deterministic schedules in dynamic environments

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

Theodore P. Lewis and **Jeffery K. Cochran**	297	Applying queueing theory to improve the modeling of spares provisioning of small combat aircraft units
G. Srinivasan	303	Cell formation using zero–one matrices—experiences with real-life data and inferences
Sekar Vembu and **G. Srinivasan**	309	Heuristics for operator allocation and sequencing in just-in-time flow line manufacturing cell
D. DeLaney, J. W. Herrmann, G. Ioannou, T. Lu, I. Minis, A. H. Mirza and **R. Palmer**	315	Design and implementation of a hybrid manufacturing facility
William G. Ferrell Jr and **Venkat R. Reddivari**	321	Higher quality products with better tuned controllers
Lorace L. Massay, Silvanus J. Udoka and **Colin O. Benjamin**	327	A simulator-based approach to cellular manufacturing system design
Kendra E. Moore and **Surendra M. Gupta**	333	Stochastic colored Petri net models of flexible manufacturing systems: material handling systems and machining
Frederick P. Lawrence and **Jeffery K. Cochran**	339	A new computational approach for project management networks
Adriano P. Nyaluke, Donke An, Herman R. Leep and **Hamid R. Parsaei**	345	Rapid prototyping: applications in academic institutions and industry

OTHER AREAS OF INDUSTRIAL ENGINEERING EXPERTISE

Gary P. Moynihan, John Schumacher and **Kenneth A. Moats**	351	Development of a shipping department management support system: a case study
Susan Peterson	355	Consortia partnerships: linking industry and academia
Gilles Cormier and **David F. Kersey**	361	Conceptual design of a warehouse for just-in-time operations in a bakery
Xia Guo Ping	367	Business process reengineering—a case study
Ahmad K. Seifoddini	371	Statistical analysis of energy consumption in China 1978–90

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

G. M. Thomas, R. Gerth, T. Velasco and **L. C. Rabelo**	377	Using real-coded genetic algorithms for Weibull parameter estimation
Gary P. Moynihan, Anoop N. R. Kumar, Giles D'Souza and **William G. Nichols**	383	A decision support system for media planning
T. J. Caporello and **P. M. Wolfe**	387	A closed-loop assessment framework for Integrated Product and Process Development implementations
T. J. Caporello and **P. M. Wolfe**	393	A synopsis of industrial engineering methods utilized in designing for the environment

ENGINEERING ECONOMICS, VALUE ANALYSIS

Dean T. Kashiwagi and **William C. Moor**	399	Application of backward chaining, "fuzzy logic," and the management of information to procurement of facility systems/services
Lissa Galbraith	405	A method to help minimize the cost of quality
H. E. Nystrom, J. M. Padillo, J. P. Nuño and **J. Andere**	411	A strategic cost analysis tool for manufacturing competitiveness with NAFTA
Gary P. Moynihan and **Rashesh J. Jethi**	417	A decision support system for multiattribute evaluation of automation alternatives
Adrien Presley, William Barnett and **Donald Liles**	421	A business case tool for the strategic justification of enterprise technologies

ERGONOMICS, HUMAN FACTORS

M. M. Ayoub and **C. J. Lin**	427	Biomechanics of manual material handling through simulation: computational aspects
Thomas L. Ward	433	Homogeneous coordinate definition of work method
Manu Gupta and **Anand K. Gramopadhye**	437	An evaluation of different navigational tools in using hypertext

SIMULATION, OPTIMIZATION, DECISION SUPPORT SYSTEMS, MATHEMATICAL PROGRAMMING

José Manuel Padillo, Ricki Ingalls and **Steven Brown**	443	A strategic decision support system for supply network design and management in the semiconductor industry

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

Contents

Hamid Seifoddini and **Manocher Djassemi**	449	A simulation study of quality index in machine-component grouping
Masanori Kodama	455	Probabilistic single period inventory model with partial returns and additional orders
J. Y. Zhu, W. B. H. Cooke, Y. Xiang and **M. Chen**	461	Optimal traffic flow schedules in a semi-parallel tree network
Antonie van Rensburg and **Nico Zwemstra**	467	Implementing IDEF techniques as simulation modelling specifications
James Bailey, Hesham Alfares and **Win Yuan Lin**	473	Optimization and heuristic models to integrate project task and manpower scheduling
Ming Liang and **Siros Amini**	477	A simulation study of some tooling problems in automated manufacturing
M. Patricia Nava	483	On the use of variance reduction techniques when comparing simulation systems at the steady state
Tai-Hsi Wu, Kai-I. Huang and **Weishing Chen**	489	Optimal scheduling plan for a coal shipment problem: an efficient approach
Ramón H. Venegas and **Emanuel Melachrinoudis**	495	Pure premium distribution estimation of an electric power plant using spreadsheet simulation
Andrew J. Spicer and **Michael H. Wang**	501	A software tool for end-of-life-cycle consideration within a DSS approach to environmentally conscious design and manufacturing
Masato Sasaki, Mitsuo Gen and **Mitsuo Yamashiro**	507	A method for solving fuzzy De Novo programming problem by genetic algorithms
Runwei Cheng, Mitsuo Gen and **Tatsumi Tozawa**	513	Minimax earliness/tardiness scheduling in identical parallel machine system using genetic algorithms
Mitsuo Gen, Kenichi Ida and **Chunhui Cheng**	519	Multirow machine layout problem in fuzzy environment using genetic algorithms
Dijin Gong, Mitsuo Gen, Weixuan Xu and **Genji Yamazaki**	525	Hybrid evolutionary method for obstacle location–allocation
Takao Yokota, Mitsuo Gen, Takeaki Taguchi and **Yinxiu Li**	531	A method for interval 0–1 nonlinear programming problem using a genetic algorithm

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

Mitsuo Gen, Kenichi Ida, Yinzhen Li and Erika Kubota	537	Solving bicriteria solid transportation problem with fuzzy numbers by a genetic algorithm
Yasuhiro Tsujimura, Mitsuo Gen and Erika Kubota	543	Solving fuzzy assembly-line balancing problem with genetic algorithms
Runwei Cheng, Mitsuo Gen and Masato Sasaki	549	Film-copy deliverer problem using genetic algorithms
Xiaojian Shen, W. L. Scheller II and R. Kenneth Wolfe	555	Solving a cafeteria dish circulation problem by computer simulation
Luis A. Quiroga and Luis C. Rabelo	561	Learning from examples: a review of machine learning, neural networks and fuzzy logic paradigms
Jun Wang and Catherine Roze	567	Formation of machine cells and part families in cellular manufacturing: an experimental study
Roderick A. Johnson	573	Evaluating the viability of on-going product oriented internal research and development projects: fact or fiction?
Jeffrey Paul Leon Dahm	579	Business planning through a linear programming system
Ahmed Kamal and William Biles	585	Toward an intelligent, integrated, object-oriented simulation environment
Daryl Santos, Jim Kane, Flor Caballero and Kumar Nagarajan	591	On the selection of a printed circuit board assembly line system
Joseph A. Heim	597	Coordination of complex collaborative tasks with distributed simulation models
Mario G. Beruvides	601	Group decision support systems and consensus building: issues in electronic media
Wurong Shih, Yu-Wen Huang, K. Srihari and George R. Westby	607	Estimation of yield through component placement accuracy in surface mount PWB assembly

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

CIM—ROBOTICS, COMPUTER-AIDED PROCESS PLANNING

Jueng-Shing Hwang and **William A. Miller**	613	Hybrid blackboard model for feature interactions in process planning
Ali K. Kamrani, Peter Sferro and **John Handelman**	619	Critical issues in design and evaluation of computer aided process planning systems
T. N. Wong and **C. B. Leung**	625	Feature conversion between neutral features and application features
Nand K. Jha	631	Geometric programming based robot control design
J. Daschbach, R. Abella and **R. McNichols**	637	Reverse engineering: a tool for process planning
R. Meenakshi Sundaram and **Ashok Srinivasan**	641	Experimental investigation on machining of free-form surfaces
David A. Koonce	647	Information model level integration for CIM systems: a unified database approach to concurrent engineering
Kai-I. Huang and **Tai-Hsi Wu**	653	Computer-aided process planning for robotic assembly
William E. Biles, Timothy J. Gornet, Kenneth Davis and **Allen Yi**	659	Computer-aided design and rapid tool development in injection molding processes
Dharmaraj Veeramani and **Yuh-Shying Gau**	663	Analytical models for optimal NC machining of regular convex polygonal pockets
T. Miyazaki, Y. Shimajiri, M. Yamada, H. Seki and **H. Itoh**	669	A knitting pattern recognition and stitch symbol generating system for knit designing
P. Vannoorenberghe, C. Motamed, J.-M. Blosseville and **J.-G. Postaire**	675	Detection of intrusion using a background structural model
Ronald E. Watkins and **Jeffery K. Cochran**	681	A line balancing heuristic case study for existing automated surface mount assembly line setups

Continued

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)

M. Chandra, Sanjiv Sarin and Thomas P. Eshun	687	Computer aided assembly sequencing: die set application
Joe G. Chow and Robert L. Sakal	693	Design and development of an intelligent machining system
Lorace L. Massay, Silvanus J. Udoka and Bala Ram	699	Robotic system design: a hierarchical simulation-based approach
Sengoda G. Shanmugham and Chell A. Roberts	705	A verification methodology for real-time supervisory control specification
D. An, H. R. Leep, H. R. Parsaei and A. P. Nyaluke	711	A product data exchange integration structure using PDES/STEP for automated manufacturing applications
D. An, H. R. Parsaei, H. R. Leep and A. P. Nyaluke	717	An activity layer for an intelligent automatic product design environment
A. Atmani	723	A production planning model for flexible manufacturing systems with setup cost consideration

Pergamon

ISSN 0360-8352
CINDDL 29(1–4) 1–728 (1995)